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09/576,957	05/24/2000	Atsushi Sakai	Q54388	5486

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EXAMINER
TRINH, MICHAEL MANH

ART UNIT	PAPER NUMBER
2822	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/576,957	Applicant(s) SAKAI ET AL.	
	Examiner Michael M Trinh	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) *7 and 15-28* is/are withdrawn from consideration.

5)☒ Claim(s) *6* is/are allowed.

6)☒ Claim(s) *1-5,8-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

*** This office action is in response to Applicant's amendment filed on November 12, 2002. Claims 1-28 are currently pending, in which claims 7,15-28 are non-elected without traverse.

*** The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

1. Claims 1-3,8-9,11,12,14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudoh et al (5,117,332) or Satoru (JP-05-166681) taken with Cichanowski (4,499,520).

Kudoh et al or Satoru teach a method for producing a solid electrolyte capacitor comprising a metal material having thereon a dielectric film (21 in Kudoh; 2 in Satoru) having surface pores due to the valve-acting metal and a solid electrolyte formed on a desired portion of the dielectric film, the metal material having valve action (col 9, lines 16-21 in Kudoh; Abstract in Satoru; Figs 1-5), wherein the method comprising the step of coating a masking material solution of pre-polymer (13 in Kudoh at col 9, lines 44-47; col 15, lines 44-48; 4 of resin in Saturo) so that the solution inherently infiltrates into the pores of the dielectric film (21 in Kudoh; 2 in Satoru) formed on the valve-metal substrate (12 in Kudoh; 1 in Satoru) and forms a masking layer on the infiltrated portion (Figs 4a,4b, 5), wherein the dielectric oxide film may be formed over the entire surfaces of the valve metal member prior of formation or attachment of the masking insulating layer (13 in Kudoh at col 9, lines 16-21; Fig 4a,4b), wherein the masking layer is inherently formed linearly around the entire circumference of the metal material as to prevent crawling up of the solid electrolyte during immersion. Re further claim 2, wherein due to in-situ curing of the pre-polymer solution (Kudoh at col 9, lines 44-47), the masking resin polymer is solidified during coating, and preventing infiltration of a solid electrolyte formed in a subsequent step. Re further claim 3, since the solid electrolyte can not infiltrate in the dielectric film where the masking resin has infiltrated, a concentration of solid electrolyte is not existed in that masked portion and thus is not higher than a detection limit value attained by using of a known electron probe microanalyser. Re further claim 8, wherein the pre-polymer solution for masking material is heat resistant resin (Kudoh at col 9, lines 44-47, lines 22-27; col 5, lines 39-49). Re claim 11, tantalum or aluminum for the metal is mentioned at col 18, lines 15-16 of

Kudoh. Re claims 12,14, pyrrole and thiophene, sulfonic salt for forming the solid electrolyte are mentioned at col 5, line 56 through col 6, line 6 of Kudoh.

Kudoh or Satoru lacks to mention coating the polymer masking insulating layer 13 by press contacting.

However, Cichanowski teaches (at col 10, lines 1-10; Fig 1; col 9, line 55 through col 10) coating a polymer 11 onto a substrate by conventional means including brushing (press contacting), roller coating (press contacting).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the polymer masking insulating layer 13 of Kudoh or Satoru by employing conventional means including brushing (press contacting) and roller coating (press contacting) as taught by Cichanowski because of desirability and necessity to coat the polymer layer on the substrate, wherein these conventional means are alternative and effective for coating the polymer. In three dimensional view, in order to prevent crawling up of the solid electrolyte, forming the masking layer entirely around an entire circumference of the metal material is inherently taught by the references or would have been obvious to one of ordinary skill in the art because of the desirability to prevent crawling up of the solid electrolyte during immersion and as to prevent shorting between anode and cathode.

2. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudoh et al (5,117,332) taken with Cichanowski (4,499,520), as applied above to claims 1-3, 8-9,11,12,14, and further of Applicant admitted prior art.

Kudoh et al teach a method for producing a solid electrolyte capacitor as applied above to claims 1-3,8-9,11,12,14.

Kudoh et al mentions tantalum or aluminum for the metal material (re claim 11) and pyrrole and thiophene, sulfonic salt for the solid electrolyte (re claim 12), but do not list other alterative materials as recited in claims 11,12-13, and do not mention mask solution contains silicon oil, silane coupling agent, or polyimidesiloxane as recited in claim 10.

Although it is considered that these alternative materials are well known in the art for substitution, Applicant admitted prior art (present specification pages 2-4, 31, line 12+, page 37, line 15+) mentions some other alternative materials as taught in the Japanese patent applications,

for example, titanium, aluminum, titanium, 3,4-ethylenedioxythiophene (claim 13), silicone oil, polyimidesiloxane, etc.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kudoh by employing these alternative materials as taught by Applicant admitted prior art and as well known in the art. This is because the substitution of art recognized equivalent materials would have been within the level of one having ordinary skill in the art.

3. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudoh et al (5,117,332) and taken with Cichanowski (4,499,520), as applied above to claims 1-3, 8-9,11, 12,14, and further of Kuranuki et al (5,198,967) and Scheer (4,872,962).

The references of Kudoh and Cichanowski teach a method for producing a solid electrolyte capacitor comprising roller coating a masking solution on the surface pores of a dielectric oxide film formed on the valve-acting metal and a solid electrolyte.

The references lack to show mass production by attaching a plurality of solid electrolytic capacitors on a metal guide during roller coating.

However, Kuranuki teaches (at fig 1) to attach a plurality of solid electrolytic capacitors on a metal guide, wherein a masking film 21 is formed the entire circumference on the dielectric oxide film formed on the valve metal, wherein forming a mask layer by roller coating a making material solution is taught by Cichanowski. Scheer is cited to show the application of masking material solution to the rotated disk in forming the material solution on the entire circumference.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the masking layer on the dielectric oxide film of Kudoh by employing the process of roller coating a masking material solution as combinatively taught by Cichanowski and Scheer, wherein attaching a plurality of solid electrolytic capacitors on a metal guide is taught by Kuranuki. This is because of the desirability to have mass production in forming the masking film on a circumference portion of the dielectric oxide film formed on the valve metal during roller coating process.

4. Claims 1-3,8-14 are rejected under 35 U.S.C. 103 as being anticipated by Kenichi et al (JP-05047611) taken with Applicant admitted prior art (specification pages 3-4) and as evidence with Nakamura et al (5,483,415) as evidence, and further of Robinson et al (5,795,647).

Kenichi et al teach a method for producing a solid electrolyte capacitor comprising a metal material having thereon a dielectric oxide film and a solid electrolyte formed on a desired portion of the dielectric film, the metal material having valve action (English abstract) wherein the method comprising the step of coating a masking material solution by "electrodepositing a solution containing a polyamic salt at least a part of the valve-acting metal in the area where the solid electrolyte is not formed, thereby forming a polyamic acid film and dehydration-curing the film by heating to form a polyimide film", wherein the "method of forming a polyimide film by electro-deposition may successfully form a film even inside the pore parts" (see Applicant admitted prior art at specification pages 3-4) so that the solution inherently infiltrates into the dielectric oxide film formed on the valve-metal substrate and forms a masking layer on the infiltrated portion (Figs 1-3), wherein the masking layer is inherently formed linearly around the entire circumference of the metal material as to prevent crawling up of the solid electrolyte. Re further claim 2, wherein due to dehydration and curing, the masking resin polymer is solidified during coating, and preventing infiltration of a solid electrolyte formed in a subsequent step. Re further claim 3, since the solid electrolyte can not infiltrate in the dielectric film where the masking resin has infiltrated, a concentration of solid electrolyte is not existed in that masked portion and thus is not higher than a detection limit value attained by using of a known electron probe microanalyser. Re further claim 8, wherein the polyimide film as masking material is heat resistant resin. Re claim 11, aluminum for the metal is mentioned in the English abstract. Re claims 12,14, pyrrole and sulfonic salt for forming the solid electrolyte are also mentioned by Kenichi. Indeed, Nakamura et al '415 evidently teach (at figures 1-2 ; col 5, lines 22-42) to coat a masking material solution by immersing the valve-acting tantalum metal into a liquid insulating substance so that the liquid solution infiltrates the porous chip and thus forming a masking layer on the infiltrated portion and thus preventing infiltration of a solid electrolyte formed in a subsequent step.

Kenichi et al teach to form the polymer by electrodepositing; whereas, the claims recite forming by press contacting.

However, Robinson et al teach (at col 2, lines 15-27) to form a polymer layer by employing any of several conventional means including roll coating and electrocoating.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the polymer masking insulating layer of Kenichi by alternatively employing conventional means including roller coating (press contacting) or electrodepositing as taught by Robinson because of desirability and necessity to coat the polymer layer on the substrate, wherein these conventional means are alternative and effective for coating the polymer.

Regarding further claim 11, Kenichi teaches the use of aluminum for the metal material, and pyrrole and sulfonic salt for forming the solid electrolyte (re claim 12), but lacks to list other alterative materials as recited in claims 11,12, and 3,4-ethylenedioxythiophene as in claim 13, and do not mention mask solution contains silicon oil, silane coupling agent, or polyimidesiloxane as in claim 10.

Although it is considered that these alternative materials are well known in the art for substitution, Applicant admitted prior art (present specification pages 2-4, 31, line 12+, page 37, line 15+) mentions some other alternative materials as taught in the Japanese patent applications, for example, titanium, aluminum, tantalum, 3,4-ethylenedioxythiophene (claim 13), silicone oil, polyimidesiloxane, etc.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Kenichi by employing these alternative materials as taught by Applicant admitted prior art and as well known in the art. This is because the substitution of art recognized equivalent materials would have been within the level of one having ordinary skill in the art. In three dimensional view, in order to prevent crawling up of the solid electrolyte, forming the masking layer entirely around an entire circumference of the metal material is inherently taught by the references or would have been obvious to one of ordinary skill in the art because of the desirability to prevent crawling up of the solid electrolyte during immersion and as to prevent shorting between anode and cathode.

Allowable Subject Matter

*** Claim 6 is allowed for the reasons as of record.

Response to Amendment

5. Applicant's remarks filed Nov 12., 2002 have been fully considered but they are not persuasive, and to be in moot of new ground of rejection.

*** Applicant's again remark about Kudoh et al (remark pages 3-4) that "...the insulating film 13 of Kudoh is formed on the conductive layer 22 (and also on valve metal member 10), and not directly on the dielectric oxide film 21, the insulating solution does not infiltrate into pores of the dielectric layer..."

Again In response, this is noted and found unconvincing since Kudoh also teaches, in another embodiment at col 9, lines 16-21, that "the dielectric oxide film may be formed over the entire surfaces of the valve member 10 prior to formation or attachment of the insulating layer 13". The subsequent deposition of the insulating layer would inherently deposit on the dielectric oxide film 21. Accordingly, the polymer insulating solution for forming the polymer layer 13 infiltrates into pores of the dielectric oxide film 21.

Forming a masking layer by press contact coating is at least taught by Cichanowski (4,499,520) and Robinson et al (5,795,647), in which coating the polymer masking insulating film is carried out by roller coating or brush which is press contacting.

In three dimensional view, in order to prevent crawling up of the solid electrolyte, forming the masking layer entirely around an entire circumference of the metal material is inherently taught by the references or would have been obvious to one of ordinary skill in the art because of the desirability to prevent crawling up of the solid electrolyte during immersion and as to prevent shorting between anode and cathode.

*** Applicant's remarks (at remark page 7) that Nakamura does not disclose that a masking material solution is coated so as to infiltrate the dielectric oxide film.

In response, this is noted and found unconvincing. Nakamura et al '415 a secondary reference is cited to evidently show (at figures 1-2 ; col 5, lines 22-42) to coat a masking material solution by immersing the valve-acting tantalum metal into a liquid insulating substance so that the liquid solution infiltrates the porous chip and thus forming a masking layer on the infiltrated portion and thus preventing infiltration of a solid electrolyte formed in a subsequent step.

Kenichi as a primary reference teaches to form a dielectric oxide film on the metal material having valve action. Robinson and Scheer are a relevant reference in the field of endeavor to show the several alternative conventional techniques for coating a masking layer for one of ordinary skill in the art to employ in order to fabrication his device.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

*** Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. Trinh whose telephone number is (703) 308-2554. The examiner can normally be reached on M-F: 8:30 Am to 5:00 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (703) 308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Oacs

Michael Trinh
Primary Examiner